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overworked word "service" every addition in every conceivable department of human activity which is constructive of society is service; that the spirit of science is to transfer something of value from the unknown into the realm of the known, and is, therefore, identical with the spirit of literature; that the moral test of every advance is whether or not it is constructive, for whatever is constructive is moral.

I would not for a moment take advantage of the present opportunity to discourage the study of human nature and of the humanities, but for what is called the best opening for a constructive career give me nature. The ground for my preference is that human nature is an exhaustible fountain of research; Homer understood it well; Solomon fathomed it; Shakespeare divined it, both normal and abnormal; the modernists have been squeezing out the last drops of abnormality. Nature, studied since Aristotle's time, is still full to the brim; no perceptible falling of its tides is evident from any point at which it is attacked, from nebulae to protoplasm; it is always wholesome, refreshing and invigorating. Of the two most creative literary artists of our time, Maeterlinck, jaded with human abnormality, comes back to the bee and the flowers and the "blue bird," with a delicious renewal of youth, while Rostand turns to the barnyard.

HENRY FAIRFIELD OSBORN

AMERICAN EDUCATIONAL DEFECTS

OPTIMISM, the national trait, was formerly the keynote of American public opinion. There used to be a serene confidence in the perfection of all natural, political or social conditions that seemed peculiarly American, and an equally serene indifference, or even contempt, for everything that differed from them. Recently,

however, all this has changed; and we now find American public opinion directing towards native institutions and conditions a criticism so uniformly severe, and a denunciation so intensely bitter as to exceed the completeness of its approval and the fulsomeness of its praise in the past. Higher education is one of the latest things to be attacked, and as in the case of politics and business, every shortcoming that is inevitable, and every weakness that is universal in a human institution has been attributed solely to its influence. Under these circumstances, it is perhaps permissible to undertake an inquiry to determine just what educational faults and deficiencies may be regarded as peculiarly American; and there may be a certain advantage in having this inquiry made by a person who has come in contact with the educational system of this country, and yet has not been identified with it long enough to have come to regard its methods as natural, or prominently enough to feel in any way responsible for it; for most of its critics have been conspicuously lacking in personal knowledge of its organization, while most of its defenders have been prejudiced by regarding themselves as responsible for the creation, or at least the toleration of that organization and its results.

The first step in such an inquiry will be to establish what elements in an educational system are most important in producing its results, in other words, on what its efficiency and vitality mostly depend. It would seem at first sight as if this question would have to be answered after the manner of most pedagogical writers, that is, by saying that an educational system's success depends, in the first place, on the sort of knowledge it undertakes to impart, and in the second place, on the methods it employs to secure the assimilation of such knowledge. A little thought, however, will show

that the law of evolution is exemplified in the intellectual quite as much as in the physical world, and as physical organs are modified according to the use made of them, so are intellectual powers and limitations dependent, to a large extent, on the purposes that have stimulated and guided the minds exhibiting them. The sort of knowledge imparted and the methods of conveying it are thus of secondary importance in determining the effectiveness of an educational system, the far more significant thing being the purposes that underlie their selection and employment. These purposes, in turn, are the result in a given people of the theory of life imposed on it by its environment and experiences; so that if the physical characteristics and the history of the United States be examined, the ideas of life's opportunities and obligations they would be likely to foster can be determined, and as a consequence the real inspiration and guide of the American educational system discovered.

The territory occupied by the United States has been inhabited by civilized people only during modern times—a period within which the dominant activity of mankind has been commerce. Commerce is a secondary activity in a savage, barbarous or imperfectly civilized society, where hunting, pastoral or agricultural pursuits direct the mental as they do the physical activities of men. Commerce, however, is at once the foundation and the directing energy of our complex modern civilization, and has made all simpler economic activities subject to its laws and parts of itself. Its influence on life is thus very great in modern times, but there are special reasons why it is greater in America than anywhere else. It was a commercial impulse that led to the discovery of America, and economic pressure has impelled all but a small number of its settlers to its shores; while the

virgin state of the country has made its material development the engrossing effort or interest of all its inhabitants up to a very recent time, and its great natural resources and advantages have created vast wealth with such rapidity as to make the economic activity imposed by necessity alluring as well. The philosophy we may expect these circumstances to develop, then, is that economic aims are the most laudable, economic pursuits the most attractive, and economic achievements the most valuable in life. We may also expect them to create a disposition to regard the principles of commerce as having universal application, and a tendency to confuse these artificial laws of limited application with the eternal verities.

Evidence of the effect of this philosophy is not hard to find in the conduct of American institutions of learning. Their commercialism is everywhere recognized, in fact, it is sometimes even recognized where it doesn't exist by overzealous advocates of reform. The fact is, that the American colleges feel that the greatest success is that which is commercially tangible, and so aim frankly at it, believing that they are most progressive when their methods are most analogous to those of purely commercial organizations. Publicity is courted in the smaller colleges in a way that suggests the philosophy, and often the phraseology of the late Mr. Barnum, who, probably without any knowledge of the Latin maxim, *Mundus vult decipi*, coined one of his own to the effect that the American people like to be humbugged. In the larger eastern institutions there is more sophistication, advertising being sought by more subtle and less direct means; but commercial aims are none the less the impulse behind them. It is even said that it is the practise of some institutions to employ scholarship funds in a way that will prove to their

own advantage rather than fulfil the spirit of the trust, as, for instance, by distributing benefices in as many different districts as circumstances permit, so as to advertise the institution as widely as possible instead of finding the most deserving recipients. Where this is done, there is probably no consciousness of its being wrong, so completely has the sense of the importance of commercial success blunted the conscience to other obligations.

It is commercial expediency also that causes American colleges to tolerate athletic excesses and other student indiscretions lest by suppressing them they should make themselves unattractive to undergraduates, and so reduce their revenue, and what is even more important, their prestige due to a large enrollment. The same motive justifies the adoption of an attitude that will be pleasing, or at least not offensive, to large donors or possible donors; something which often involves concessions to wealthy students which do not tend to keep either the moral or intellectual standards on a plane that commands respect. Commercial aims also justify the practise so common in America of teaching everything the latest popular or pedagogical whim demands, entirely irrespective of whether there is equipment to justify such attempts or not, or whether the subjects have any educational value or not. The practise of paying inadequate salaries to a large number of nominally qualified men instead of securing a less imposing array of competent teachers has a commercial basis, and so has the disposition to extend faculties by giving appointments to wealthy men who are willing to take their pay in the reputation for intellectuality such appointments are supposed to confer. Of course not all teachers who volunteer their services are sources of weakness; some of the most capable and effective

men teaching in American colleges to-day are unpaid, but the majority of such men have all the superficiality and ineffectiveness of the amateur. Wealthy men, too, are often given places on the governing boards of colleges, in the hope that they will either contribute funds for their support during their lives or bequeath them money when they die. It is probable that many of them do one or both of these things, and it is unquestionable that many of them also render faithful and valuable services; but the practise, nevertheless, is the root of many evils. Men chosen for reasons such as these are, in general, prominent either commercially or as intellectual amateurs; and in neither case are they likely to have a profound, or even an intelligent, understanding of what qualities are necessary for success in educational work. The practical man of affairs mistakes aggressiveness for strength, with the result that many men are given preferment in teaching who are well adapted to commercial pursuits, but who lack the intellectual breadth and refinement necessary for success in any educational work that is more than elementary. The intellectual amateur, on the other hand, mistakes mental dexterity for creative power, and so brings a large number of teachers into prominence who are more or less brilliant according to drawing room standards, but whose moral and mental insipidity makes them as incapable of realizing as they are of discharging the grave responsibilities of their positions. Men of both classes are also occasionally guilty of more or less flagrant nepotism, and undoubtedly much of the popular opposition colleges are at present encountering is due to this, and to other evidences of the fact that, for reasons that are only commercially justifiable, they have subjected themselves to the control of men who guide them in accordance

with shallow views and class preconceptions.

The above are some of the familiar evidences of the effect of commercial ideas of obligation and necessity on the administration of American colleges; when it comes to the direct application of educational methods, there is evidence equally strong of the influence of the same ideas. Education, in the first place, is regarded as an economic tool, and there is no ability shown to administer it as anything else. There is an energy and sincerity behind instruction in professional subjects that forms a strong contrast with the listless and futile manner in which subjects having no readily discernible economic importance are dealt with. The result of this is a far higher efficiency in professional and technical schools than in colleges devoting themselves to the humanities; but it is an efficiency that is only relatively high, however; for the disposition to consider economic results alone leads to the elimination or neglect in such schools of all knowledge that has not a direct, or at least a fairly obvious indirect vocational application. The effect of this narrowness is to suppress all initiative except in economic activity, and as a consequence, American education has been unable to inspire any interest in pure science, in which the nation's achievements have been insignificant, while its activity and success in the commercial application of scientific principles is, perhaps, unequalled among modern peoples.

When we come to education which can not be regarded as an economic tool, and which must be justified on other grounds, we find the influence of a commercial philosophy less direct, its main effect being to make American ideas on such points shallow and almost childish, by engrossing the national intellect so completely with

commercial conceptions as to make it helpless with anything else. The main way in which such education is justified is as the acquisition of information; and this view is very prevalent, for it has much to recommend it: it simplifies instruction by making it the mere distribution of information; and it makes it easy to determine scholarship by estimating it according to the amount of information possessed. Though not the fundamental reason for it, this view is instrumental in bringing about the excessive specialization that characterizes American even more than European education. Of course if education is the acquisition of information, no man can ever be completely educated, for the total of information is too great for the capacity of any one man; so the only thing to do is to limit one's aims to the acquisition of a manageable portion of it, and to confine all effort and interest to that portion alone. This leads to a lack of breadth, and to intellectual intolerance; lack of understanding of other subjects inducing contempt for them, while exclusive devotion to a single branch of learning gives an exaggerated idea of its importance. This intolerance exhibits itself by bringing about competition instead of cooperation between men who give instruction in different subjects. It is said by the graduates of one of the largest scientific schools in the country, that the majority of its students will cheat, without any consciousness of doing wrong, in any subject that is not a professional one. It is probable that this statement is somewhat exaggerated; but it is undoubtedly a fact that the unconscious attitude of many men high in academic circles is one of amused contempt for all branches of knowledge other than their own, and in spite of the fact that they are very insistent on the necessity of a broad education, their own in-

ward conviction is evident to the student, and is far more effective in forming his opinion than any merely perfunctory utterances that no more express personal belief than the forms of common politeness express personal regard. Such a theory of education as this, of course, makes no attempt to develop either the imagination or the judgment, and no credit is accordingly given for the possession of these qualities; so that the test for scholarship becomes largely physical in character, success in it depending on ability to apply one's self without remission to the acquisition and the retention intact of large masses of minute information, a task too monotonous and mechanical for any highly organized mind to endure without injury. The evils in the train of this theory are thus numerous. It propagates intellectual bigotry; it rewards mediocre intellectual achievement, and discourages by its neglect the cultivation of the higher powers of the mind; while the excessive application it imposes creates an environment in which leisure and reflection—both essential to true scholarship—are impossible.

Opposed to this theory, which makes anything like higher education impossible in most American colleges, is another, to some extent the outgrowth of it, in which it is perhaps easier to trace direct commercial influence. It is a belief that, although education is the acquisition of information, not all information is of equal importance, but that it must be valued according to its rarity, and like many articles of commerce, according to its remoteness from any possibility of use. The men who hold this theory do much to confirm the pedants just mentioned in the control of cultural education; for the public having to judge only between the two types (others being of very rare occurrence), justly regards the pedants as the

more worthy of its respect; for they at least have vigor and activity to recommend them, and knowledge, that though ill-assorted and often of ridiculous insignificance, is still extensive; while their opponents have only languor, effeminacy and conceit to justify their claims to leadership. Apparently the pedants are grateful to their foes for this support, even though it is unwillingly afforded, or perhaps they really feel a consciousness of the insufficiency of their own teaching; at any rate, they show themselves extremely tolerant of their rivals, and very ready to accord them a certain amount of recognition. Professor Irving Babbitt has pointed out, in his "Literature and the American College," the prevalence of either pedantry or dilettantism in the teaching of literature in the United States; and he has made clear the further fact that there is an unholy alliance between them, and that pedantry occasionally recognizes dilettantism in order to avoid the necessity of acknowledging the claims of scholarship that might prove more dangerous to its supremacy. The effect of this dilettante theory is thus, directly, to encourage intellectual frivolity and presumption; and indirectly, by confirming the rule of pedantry, to place a handicap on real scholarship.

Cultural education is thus ineffective in this country because it has no direct economic application, and all attempts to justify it on other grounds have been lacking in intelligence or sincerity. Such attempts are of course incapable of arousing any sincere or lasting enthusiasm; so it is not to be wondered at that men who can inspire enthusiasm are even rarer in America than elsewhere. It is almost impossible for American colleges to find men who can lecture to large bodies of students with any success; and this has led to a great deal of

insistence on the advantages of small classes, and on the necessity of bringing the student into close personal contact with his instructors. There can be no doubt of the advantage of the former arrangement in most subjects, and of the desirability of the latter relationship wherever possible; but there can also be no doubt that the prevalence of the demand for small classes in American colleges is largely due to a failure to understand that enthusiasm can be an educational stimulus, and a consequent disposition to rely on compulsion alone. If a teacher lacks the power to interest a large class, he will not gain it by having a small one to deal with; he will, however, usually get better results, for the new arrangement will enable him to police his class better. Of course there is no royal road to learning, and much resistance has to be overcome, and much drudgery done before any subject can be thoroughly mastered, especially in modern times when the quantity and complexity of knowledge has increased so enormously. On the other hand, however, unrelieved drudgery imparts no creative power to the mind, especially if that drudgery is enforced. A drillmaster can teach an army the manual of arms, and how to execute all sorts of evolutions, but only a great general can inspire courage and enthusiasm in it by instilling into it a sympathy with the purposes of the campaign. American education undertakes to dispense with the general and get along with the drillmaster, largely because the drillmaster is a far commoner type than the general.

The prevalence of mediocre teachers in America is due to a number of complexly related causes; the first of which is a lack of emotional power, the basis alike of personal magnetism and spiritual insight. This is an age of rationalism, and rationalism reinforced by commercialism, in America,

becomes pure sensationalism—something which is without moral sympathies, and therefore blind. No one would desire to have religious dogmatism control education again, but that is no sufficient reason for enduring something that errs as perversely in the opposite direction. There are more things in heaven and earth than are dreamed of in the philosophy of sensationalism, or in that of reason uninspired by moral instinct either. We count Shakespeare our greatest seer, and no one would dare to say that he submitted his reason to the domination of dogma or superstition; he sought for truth and sought it fearlessly wherever his gaze could penetrate, and the verdict after three hundred years is that it penetrated further, and perceived more justly than that of any other mind. Voltaire, however, a rationalist of the extreme type, could see but little in Shakespeare, whose feeling and fancy were largely outside the range of his comprehension. American education stands before the world's knowledge much as Voltaire did before the wisdom of Shakespeare—a large part of it lies outside the range of its comprehension, and therefore goes uninterpreted, even unperceived by it.

Another cause for the lack of inspiring teachers is the fact that commercialism begets a tendency to construct a criticism of life entirely in accordance with surface conditions, and a consequent inability to perceive truth in its ultimate form. Heraclitus of Ephesus regarded the universe as like a river, into which it is impossible to step twice and find it the same. Heraclitus, however, knew that though the waters might linger calmly in one place only to rush swiftly or plunge madly in others, according to the nature of their channel, they are yet controlled by laws that are fixed and invariable; so that it is the same force that impels them on all oc-

casions—one unchanging and eternal law of motion, the uniform character of which is disguised by the infinite variety of its temporary manifestations, the result of its force being modified by being transmitted through ever changing local conditions. Now in the case of a physical river, it is a far more difficult and a far more valuable thing for the mind to perceive that its motion is a manifestation of a force that is universal wherever there is matter, than it is to learn an endless number of special facts bearing on the causes of individual variations. Furthermore, all the special facts the most conscientious and painstaking study of the river alone can ever accumulate, will be insufficient to give any but a very deceptive notion of what this basic force really is; for to obtain that we must study, not the river alone, but to some extent at least, all matter, including even the most distant stars.

The figure of the river may seem too simple a representation of the complex problem of education, or one that views it from a standpoint that is visionary rather than practical. It affords, however, a very accurate illustration of the most characteristic weakness of American education—a disposition to deal with facts and to neglect principles. As is to be expected from this, American scholarship, where it has made itself at all conspicuous, has done so by exhibitions of minute or mechanical accuracy, or by extensive command of details. The inclination towards sensational philosophy of course makes its conclusions tend towards materialism, but this is curiously modified by the analogies of commerce, the creation of human caprice as much as of human necessity; so that all sorts of will-o-the-wisps are mistaken for fixed luminaries. This makes it the servile imitator of the most futile type of German pedantry, whose wide range of knowledge

it can not hope to approach, but whose ridiculous indifference to the commonest demonstrations of experience it often surpasses.

It is, of course, unfair to say that all these faults are exclusively American; they are nearly all, to some extent, universal characteristics of the academic mind, or qualities that distinguish our age. It is fair, however, to say that they are more pronounced in America than elsewhere; for modern qualities have had a more favorable field for their development in this country than in older lands. On the other hand, however, modern tendencies have already run their course in America, and the reaction against them is already setting in; while in Europe their influence is still on the increase and is rapidly reducing education to a basis as commercial as that of this country. The opportunity for educational improvement is therefore greater in America than elsewhere, but so also is the need. Within fifty years the capital of the world will be on the North American continent, where also the stage is now being set for the most tremendous and the most momentous social struggle that civilization has ever faced. No longer can this country pay heed to nothing but immediate economic advantage; energy may have been sufficient initiative and shrewdness sufficient guidance for it when it was new and its opportunities unlimited, but now duty must lead and wisdom direct it when its economic and social situation has become so complex. The problem of conserving the physical resources of the country is a vast one, but a far vaster one is the development of the national intelligence to an extent that will fit it to deal with the infinitely complicated social and economic problems that the last century has developed. The present administration of education produces a one sided and inharmoni-

ous development as a consequence of its shallow conceptions of the purposes and possibilities of intellectual training. A public opinion must be created which will be intelligent enough to detect and reprehend methods that are insufficient or unworthy, and men that are ineffective or unfit, as well as to accord adequate recognition to men of high purpose and real ability. When such an opinion exists there need be no fear of a lack of men both willing to strive for and capable of earning the high distinction its approval will confer.

SIDNEY GUNN

MASSACHUSETTS INSTITUTE
OF TECHNOLOGY

HOWARD TAYLOR RICKETTS¹

DR. RICKETTS came to the university in 1902 to join the newly founded department of pathology and bacteriology. He had just returned from a year's visit to European laboratories. Previously he was fellow in cutaneous pathology in Rush Medical College for two years, taking up that work at the end of his service as interne in the Cook County Hospital. His medical course he took at the Northwestern University Medical School, where he graduated in 1897.

He was a modest and unassuming man, of great determination and of the highest character, loyal and generous, earnest and genuine in all his doings—a personality of unusual and winning charm. His associates of the hospital and fellowship days who knew him well, knew his ability and energy, his distinct fondness for the day's work, all looked to him for the more than ordinary achievement.

He deliberately turned away from the allurements of active medical practise and decided to devote himself to teaching and investigation in pathology. He had early become possessed of noble ideals and had a pure love

for the search after truth in his chosen field, which abided with him and gave him a high conception of all his duties and relations and placed a special stamp on his work. His instinct for research at no time was permitted to lie dormant and unused, but growing stronger it carried him on farther and farther, and in due time the university freely and in special ways promoted the work in which he was to accomplish such large results. The torch was placed within the grasp of hands fit to carry it forward, and during the few short years given him he advanced it farther than we may realize at this moment, because he broke open paths for future progress.

His earlier researches are all marked by rare insight, directness and accuracy, by clear and forceful reasoning; it is in his brilliant work on Rocky Mountain fever, however, that Dr. Ricketts fully reveals himself as investigator of the first rank. He took up the study of this fever in the spring of 1906 as a sort of pastime during an enforced holiday on account of overwork. The disease is a remarkable one; it occurs in well-defined areas in the mountains, is sharply limited to the spring months, varies greatly in severity, the mortality in one place being about 5, in another between 80 and 90 per cent. For some time it had been regarded as caused in some way by the bite of a tick. Dr. Ricketts promptly found that the disease is communicable to lower animals and that a certain tick, which occurs naturally on a large number of animals in those regions, by its bite can transmit the disease from the sick to the healthy animal.

These observations opened a new field, and henceforth he devoted himself untiringly to the investigation of the many problems that arose one after another as the work went on, both in the laboratory here and in the field. As we follow the various stages in the progress of this intensely active work it becomes very clear that Dr. Ricketts not only was gifted with imaginative power so that he could see and trace the various lines along which the solution of a problem might be sought, but that he also possessed in a full measure the capacity for that hard, accurate, patient work

¹An address delivered by Professor Ludwig Hektoen at a memorial service in the Leon Mandel Assembly Hall, May 15, 1910. Reprinted from *The University of Chicago Magazine*.